

Claims

1. Arrangement for filling and/or emptying receptacles (13) filled and/or to be filled with articles, essentially including at least one handling device (11) for transport-
5 ing receptacles (13) that have been and/or are to be filled between a reservoir (15, 16, 17, 18) and a device (12, 14) which alters the level of the receptacles (13), at least one device (12, 14) which alters the level of the receptacles (13), and at least one reservoir (15 to 18) for holding receptacles (13) that have been and/or are to be filled, characterised in that the arrangement (10) is designed as a closed unit,
10 such that the handling device (11) is surrounded in cell fashion by the at least one device (12, 14) altering the level of the receptacles and by the at least one reservoir (15 to 18).
2. Arrangement according to claim 1, characterised in that the arrangement (10) in
15 addition to four reservoirs (15 to 18) has a device (12) for emptying receptacles (13) and a device (14) for filling receptacles (13), which are connected by fence elements (19) into an annular cell forming a work chamber (20), the handling device (11) being arranged in the work chamber (20).
- 20 3. Arrangement according to claim 1 or 2, characterised in that the reservoirs (15 to 18) are closable on their inwardly directed side facing towards the handling device (11).
4. Arrangement according to any one of claims 1 to 3, characterised in that each re-
25 servoir (15 to 18) is associated with a tray bay element which can optionally be opened or closed.
5. Arrangement according to claim 4, characterised in that the reservoirs (15 to 18) can be coupled to and uncoupled from the tray bay element.

6. Arrangement according to claim 4 or 4, characterised in that the tray bay elements are constructed as roll-up gates (21, 22, 23, 24).
7. Arrangement according to claim 6, characterised in that the reservoirs (15 to 18)
5 can be fixed to frames (25, 26, 27, 28) of the roll-up gates (21 to 24).
8. Arrangement according to any one of claims 1 to 7, characterised in that the reservoirs (15 to 18) are stationary or mobile.
- 10 9. Arrangement according to any one of claims 1 to 8, characterised in that the reservoirs (15 to 18) have at least one compartment (35), preferably several compartments (35), for receiving the receptacles (13).
10. Arrangement according to any one of claims 1 to 9, characterised in that the reservoirs (15 to 18) are constructed as trolleys (36).
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11. Arrangement according to any one of claims 1 to 9, characterised in that the reservoirs (15 to 18) are constructed as container trolleys (41).
- 20 12. Arrangement according to claim 10 or 11, characterised in that the trolleys (36) or container trolleys (41) can be fixed in the region of the roll-up gates (21 to 24) by means of plate elements (29, 30) arranged pivotably on the frame (25 to 28).
13. Arrangement according to any one of claims 1 to 12, characterised in that the
25 handling device (11) is designed universally in such a way that receptacles (13) can be gripped at a smooth partial surface on the side facing out of the open reservoir (15 to 18).
14. Handling device, in particular as a component of the arrangement according to
30 any one of claims 1 to 13, essentially including a handling arm (47) which is designed to be movable in several degrees of freedom, a gripping element (48)

which is arranged movably at the free end (49) of the handling arm (47), and at least one linear guide (50) with a carrying element (51) movable on the linear guide as well as a holding element (52) for the receptacles (13), and a drive (53) for moving the carrying element (51), characterised in that the gripping element (48) is designed in such a way that receptacles (13) can be gripped at smooth partial surfaces on the side facing out of a reservoir (15 to 18).

15. Handling device according to claim 14, characterised in that the gripping element (48) on the side facing towards the receptacles (13) has elements for pushing and/or sliding the receptacles (13).

16. Handling device according to claim 14 or 15, characterised in that the gripping element (48) has at least one, preferably two suction cups (57), in particular for pulling the receptacles (13).

17. Handling device according to any one of claims 14 to 16, characterised in that the gripping element (48) has at least one, preferably two buffer elements (58), in particular for pushing the receptacles (13).

18. Handling device according to claim 17, characterised in that each suction cup (57) and/or each buffer element (58) is arranged on the carrying element (51) on the side facing towards the receptacles (13).

19. Handling device according to any one of claims 14 to 18, characterised in that a supporting element (59) supporting the bottom (60) of the receptacles (13) is arranged on the carrying element (51).

20. Handling device according to claim 19, characterised in that the supporting element (59) is movable.

21. Handling device according to claim 20, characterised in that the supporting element (59) is spring-loaded.
22. Handling device according to any one of claims 14 to 21, characterised in that on
5 the carrying element (51) on the side facing towards the receptacles (13) are arranged at least one, preferably several sensor elements (61).
23. Handling device according to any one of claims 14 to 22, characterised in that on
10 the gripping element (48), preferably in the region of the holding element (52) for the receptacles (13), is arranged a monitoring element for monitoring the contents and the state of the contents.
24. Handling device according to any one of claims 14 to 23, characterised in that at
15 least in the region of the holding element (52) for the receptacles (13) is arranged at least one additional fixing element for the receptacle (13) and/or for the contents of the receptacles (13).